

# ADDITIONAL PANAMANIAN PASSIFLORACEAE<sup>1</sup>

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## ABSTRACT

Seven species of Passifloraceae, *Dilkea acuminata*, *Tetrastylis lobata*, *Passiflora tiliaefolia*, *P. costaricensis*, *P. capsularis*, *P. edulis*, and *P. arborea* are for the first time reported for Panama. *Dilkea* and *Tetrastylis* represent new generic reports. *Passiflora williamsii* is reduced to a variety, as *P. platyloba* Killip var. *williamsii* (Killip) A. Gentry, and recent collections of *P. pittieri* suggest that sect. *Cirrhipes* and *Dolichostema* may not be distinct.

Eight additional species of Passifloraceae have been collected in Panama since the *Flora of Panama* (Woodson & Schery, 1958) treatment of the family. These include representatives of two genera new to Panama. All of these species come from wet-forest areas of the country. In addition, a name change is proposed for one Panamanian species as additional collections of *P. williamsii* and *P. platyloba* indicate that the two are not specifically distinct.

The three Panamanian genera of Passifloraceae may be distinguished as follows:

- a. Stamens 5, borne on a well-developed gynophore; sepals 5; petals 5 or lacking; tendril (if present) unbranched.
  - b. Styles 4; anthers held to one side of flower, filaments united beyond the gynophore, only their tips free ..... *Tetrastylis*
  - bb. Styles 3; anthers radially distributed, filaments free from their union with gynophore ..... *Passiflora*
- aa. Stamens 8 or 10, borne on calyx floor, not on a gynophore; sepals 4; petals 4; tendrils (if present) usually divided at the tips ..... *Dilkea*

***Dilkea acuminata*** Mast., Trans. Linn. Soc. 27: 628. 1871.

The genus *Dilkea* has been thought to be confined to the Amazon basin. However, several collections of *Dilkea* from eastern Panama and the Chocó of Colombia are now at hand. The four Panamanian collections are all from Santa Rita Ridge, Colón Province; three are in fruit and the fourth in flower. *Duke 15284*, collected 23 Feb. 1968, was described as a small shrub 5 feet high with orangish fruits. The ovoid acuminate fruit is slightly more than 7 cm long and about 3 cm wide. The leaves are oblanceolate-elliptic tapering to a cuneate base and acuminate apex. *Foster 1758*, collected 23 Apr. 1970 and described as a 4 m shrub with yellow fruit, has leaves in part oblanceolate-oblong (25–26 cm long and 9–9.5 cm wide) and in part oblong-elliptic (14 cm long and 7 cm wide). The single fruit examined is globose and 4 cm in diameter with a slight apical elongation. *Dressler 3936*, collected 7 Feb. 1971, is described as a vine 5 m tall, mostly cauliflorous, the flowers white, stigma yellow. This specimen has leaves oblanceolate to oblong-oblanceolate, 20–25 cm long, 6.5–9 cm wide, cuneate to attenuate at the base, long (2 cm) acuminate to apically rounded. The flowers

<sup>1</sup> Unqualified references to Killip throughout this paper refer to that author's monumental monograph (The American species of Passifloraceae. Publ. Field Mus. Nat. Hist., Bot. Ser. 19: 1–613. 1938.).

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have the calyx 3.2–3.5 cm long and the ovary is distinctly stipitate. The flower parts are in fours. *Croat & Porter 15298*, collected 9 Jul. 1971, was noted as having a lemon yellow fruit and sweet pulp and seeds. The specimen has tendrils and was probably a vine although habit was not noted by the collectors; the fruits are not preserved with the collection. Both Chocó collections [*Gentry & Aguirre 15318* from the Río Tigre east of Unguia near the base of the Serrania del Darién and *Duke & Idrobo 11254* (NY) from rain forest NW of Alto Curiche] are sterile. My collection was a shrubby vine and the Duke & Idrobo collection is described as a tendriferous vine. These collections have oblanceolate, acute to acuminate leaves (one leaf reaches 30 cm long and 9 cm wide).

Specific identification of the isthmian plant remains tentative. The five *Dilkea* species recognized by Killip (represented by a total of fifteen collections) were separated by rather tenuous differences in shape and size of fruits and leaves. The Panamanian plants are clearly neither *D. parviflora* nor *D. retusa*. The ovoid, 7 cm fruit of *Duke 15284* indicates *D. johannesii* Barb. Rodr., previously known only from the Central Amazon basin. The globose fruit of *Foster 1758* indicates *D. acuminata* or *D. wallisii* Mast. The former, previously known only from Manaus, Brazil, has oblanceolate or oblong-oblanceolate leaves more than three times longer than wide; the latter, known from Amazonian Venezuela, Peru, and Brazil, has broadly ovate to oblong-oblanceolate leaves less than three times as long as wide. Both species have recently been reported from Amazonian Colombia (Killip, 1960; Holm-Nielson, 1974). Leaf variation in the Panamanian plants exceeds that of *D. acuminata* and *D. wallisii* combined.

Despite the variability of the Panamanian and Chocó collections, I am convinced they represent a single taxon. I have chosen to identify them with *D. acuminata* in part because that is the oldest epithet. If variability in this complex in Amazonia is as extensive as it appears to be in Panama, at least *D. johannesii* and perhaps also *D. wallisii* are likely to prove synonymous with *D. acuminata*.

***Tetrastylis lobata*** Killip, J. Wash. Acad. Sci. 16: 368. 1926.

Another genus of Passifloraceae which is new to Panama is *Tetrastylis*, represented by a single collection of *T. lobata* from Bocas del Toro Province. The collection (*Gentry 2808*) is from a recently cleared area in the valley behind the first fila above Almirante, Bocas del Toro Province and my field notes describe it as a herbaceous vine with white flowers and sticky leaves. *Tetrastylis* is easily told from *Passiflora* by its four styles and the arrangement of its stamens which are all held to one side of the gynophore rather than distributed evenly around it. The species is known from Costa Rica so its occurrence in Panama is hardly surprising.

***Passiflora platyloba*** Killip var. ***williamsii*** (Killip) A. Gentry, stat. et comb. nov.

*P. williamsii* Killip, J. Wash. Acad. Sci. 12: 262. 1922.

*Passiflora platyloba* and *P. williamsii* were simultaneously published by Killip. The leaves glabrous beneath and deeply cordate in *P. platyloba* of Guatemala to Costa Rica (to Panama fide Killip, 1938: 59) were contrasted with leaves

puberulous and basally truncate or subcordate in *P. williamsii* of central Panama. Later Killip noted that the leaves of *P. williamsii* could also be cordate and emphasized its densely white tomentose ovary in separating it from *P. platyloba* in his monograph. Additional collections indicate the inconstancy of these differences. *Lewis et al.* 2250 from Los Santos Province, Panama has the pubescent ovary and truncate leaves of *P. williamsii* but the leaves are only subpuberulous. *Duke* 15516 from Darién Province has a puberulous ovary and puberulous leaves which are strongly cordate. *Heithaus* 157 from COMELCO E (west of Bagaces), Guanacaste, Costa Rica has a glabrous ovary and cordate leaves with subpuberulous main veins beneath; *Gentry* 838 from the same area has completely glabrous leaves. *Semple* 69 from the same locality has completely glabrous leaves but was identified as *P. williamsii*. Since leaf variation is not geographically correlated, only ovary pubescence remains a potential character for segregation of the Panamanian from the Costa Rican and Central American plants. I do not consider this sufficient difference for species recognition. *Passiflora platyloba* is the best-known name and should be adopted for the Panamanian plants; indeed that name has already been used on some Panamanian collections in the Missouri Botanical Garden (MO) herbarium. Plants with pubescent ovaries are best recognized as *P. platyloba* var. *williamsii*.

*Passiflora velata* Mast. and *P. nitens* Johnston are similar variants of the closely related South American *P. serrulata* Jacq. which are separated only by indumentum of the leaf undersurface. Killip has already synonymized these with *P. serrulata*.

***Passiflora tiliaefolia* L., Sp. Pl. 956. 1753.**

*Passiflora tiliaefolia* is a member of subgen. *Granadilla*, ser. *Tiliaefoliae* and has recently been collected in Panama. The collection (*Croat* 25908 from above Santa Fe (730–770 m), Veraguas Province) resembles *P. seemannii* Griseb. in having large foliaceous bracts, glands at the petiole apex, and broadly ovate subentire leaves. It differs from that species in a very shallowly cordate leaf base and broader (ca. 5 mm wide), lanceolate foliaceous stipules. *Passiflora seemannii* has deeply cordate leaves with the lobes overlapping and linear stipules. Another difference between *P. tiliaefolia* and *P. seemannii* is the latter's tuberculate inner side of the calyx tube. The flowers of the Croat collection are immature; however, the operculum appears to be entire like *P. seemannii* but unlike the even more closely related *P. nelsonii* Mast. & Rose of Guatemala and southern Mexico.

*Passiflora tiliaefolia* was previously known from Peru to Colombia. It is widespread in the western and central cordilleras of Colombia and its occurrence in Panama is not especially surprising.

***Passiflora costaricensis* Killip, J. Wash. Acad. Sci. 12: 257. 1922.**

A Central American species ranging from Guatemala to Costa Rica, the occurrence of *P. costaricensis* in Panama is almost to be expected. The species turns out to be widespread, though uncommon, in wet-forest areas throughout the country, having been collected in Bocas del Toro (above Almirante, *Gentry*

2690), Panamá (Cerro Campana, *Kennedy et al.* 2054), and Colón (Río Guanche, *Kennedy & Foster* 2202) Provinces. It can immediately be told from all other Panamanian species by its elongate fusiform fruit. In the *Flora of Panama* it keys out with *P. sexflora* which differs in several-flowered peduncles, small spherical fruits, smaller leaves, and a finer pubescence. *Passiflora costaricensis* is barely distinguishable from *P. capsularis* (see below) by its hirsute pubescence and the leaves longer than broad and with a semicircular sinus.

***Passiflora capsularis*** L., Sp. Pl. 957, 1753.

This widespread species has been known from Guatemala to Costa Rica, Colombia, the Greater Antilles, and from Central Brazil to Paraguay. The unusual disjunctions in its range are suspect and, predictably, the species has turned up in Panama. The single Panamanian collection is *Duke & Lallathin* 15023 from El Valle, Coclé Province. *Gentry* 10211 and *Dodson* 5240 (Selby) (both from the Río Palenque Field Station, Los Ríos Province) are the first Ecuadorean collections and partially fill another gap in the known range of the species, which is likely to be found in Peru as well. *Passiflora capsularis* keys out with *P. sexflora* in the *Flora of Panama* but differs in 1-flowered peduncles, elongate fusiform fruits, and less dense pubescence. Leaf shape and the shorter, often more or less appressed trichomes of the stem and petioles differentiate this species from *P. costaricensis*.

***Passiflora edulis*** Sims, Bot. Mag. 45, pl. 1989. 1818.

The native range of this widely cultivated species is obscure but is probably Brazil. In Panama it is found in cultivation and semicultivation and occasionally as an escape. Panamanian collections include *Semple* 30 and *Croat* 14268 (both El Valle, Coclé Province) and *Tyson* 5797 (Cerro Punta, Chiriquí Province). At least the Tyson collection was apparently growing wild. This species keys out with *P. adenopoda* Dc. and *P. vitifolia* H.B.K. in the *Flora of Panama* treatment. It agrees with the former in prominent petiolar glands borne directly beneath the leaf blade, serrate involucre bracts, and purple and white flowers. It agrees with the latter in 3-lobed leaves and sessile nonstipitate petiolar glands. Panamanian collections of *P. edulis* have been identified with both these species.

***Passiflora arborea*** Spreng., Syst. Veg. 3: 42. 1826.

This tree *Passiflora* was previously known only from Colombia where it is fairly widespread. Two Panamanian collections, one in fruit and one sterile, match Colombian material and a photograph of the type of this species at MO and may be confidently referred to it. The Panamanian collections, from opposite ends of the country, are *Gentry & Mori* 13800 from 1,400–1,500 m on Cerro Malí, Darién Province and *Kirkbride & Duke* 730 from the headwaters of Río Malí, Chiriquí Trail, Bocas del Toro Province. My collection was a 3 m tree and the Kirkbride and Duke collection reportedly a 15 m tree. *Passiflora arborea* is utterly unlike any species listed in the *Flora of Panama* and is characterized by its arboreal habit, 3-angled ovary, long, bifurcate peduncle, and large (to 30 cm long and 19 cm wide) entire, pinnately veined oblong to elliptic-oblong leaves.

**Passiflora pittieri** Mast., Bot. Gaz. (Crawfordsville) 23: 246. 1897.

This species, like *P. arborea* a member of subgen. *Astrophea*, was described from Costa Rica and reported for Panama by Killip (1960) subsequent to the *Flora of Panama* treatment. In addition to the two Panamanian specimens cited by Killip (from Isla de Coiba and Pinogana, Darién) may now be added a third and very noteworthy collection. *Liesner 197* from San Bartolo Limite, 400–500 m, 12 mi W of Puerto Armuelles, Burica Peninsula, Chiriquí Province is described as petals white, calyx pale with brownish spots, column red, ovary and anthers greenish white. Although agreeing in most features, including the definitive long-tubular operculum, with *P. pittieri*, the dichotomously branched peduncles of the Liesner collection bear well-developed tendrils as in Killip's monotypic section *Cirrhipes*. Hence it appears that sects. *Cirrhipes* and *Dolichostemma* of subgen. *Astrophea* cannot be separated.

Another recent collection of *P. pittieri* is the first record of the species from Colombia's Chocó Department. *Gentry & Mori 13728* from near the Panamanian border at 1,000 m on the trail from Unguia to Cerro Malí is a sterile juvenile plant with axillary tendrils at the upper nodes. Allowing for its juvenile condition, it agrees fairly well with *P. pittieri* and is certainly none of the other species known from Panama.

Similar to *P. arborea* in large, entire, oblong-obovate leaves with glands at base of the midvein, bifurcate peduncles, and 3-angled ovary, *P. pittieri* differs from that species in its long-tubular operculum, tendency to lianous habit and (sometimes) tendrillate inflorescences.

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